

Review of *Hermilepidonotus* Uschakov, 1974, and two species of polynoid polychaetes (Lepidonotinae)

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Abstract.—The genus *Hermilepidonotus* Uschakov, 1974, and type species *Lepidonotus robustus* Moore, 1905, are reviewed, and compared with the closely related *Lepidonotus helotypus* (Grube, 1877), based on examination of types and available new material.

Under *Lepidonotus helotypus* (Grube, 1877), from China, Seidler (1924:56) included *Lepidonotus robustus* Moore, 1905, from the Gulf of Alaska. This was followed by Annekova (1937), from the North Japan Sea, by Hartman (1938), from Alaska, and by Uschakov (1950, 1955), from the Okhotsk Sea. On further study, *L. robustus* was considered to be distinct from *L. helotypus*, by Hartman (1948) and by Uschakov (1974). Based mainly on a characteristic pharynx, the latter author referred *L. robustus* to the new genus *Hermilepidonotus*. The close similarity of these two Pacific Ocean boreal species is the basis for adding *L. helotypus* to *Hermilepidonotus*. The two species are more fully described herein and some new records are presented. In addition to the specimens deposited in the National Museum of Natural History, Smithsonian Institution (USNM), types and additional material were obtained on loan or in exchange from the following sources: the former British Museum (Natural History), London (BMNH), now renamed the Natural History Museum, London, through J. D. George and A. I. Muir; National Science Museum, Tokyo (NSMT), through M. Imaijima; Zoological Institute Academy of Science, Leningrad (ZIASL), through P. V. Uschakov; Zoologisches Museum, Berlin (ZMB), through G. Hartwich; and Zoologisches Staatsmuseum, Hamburg, through G. Hartmann-Schröder.

Family Polynoidae Kinberg, 1856
Subfamily Lepidonotinae Willey, 1902
Genus *Hermilepidonotus* Uschakov, 1974,
emended

Type species.—*Lepidonotus robustus* Moore, 1905, by monotypy and original designation.

For: *H. robustus* (Moore, 1905) and *H. helotypus* (Grube, 1877), new combination.

Diagnosis.—Body elongate-oval, with 26 segments. Prostomium lepidonotoid, bilobed, with 3 antennae and 2 palps; ceratophore of median antenna in anterior notch, lateral antennae inserted terminally on anterior extensions of prostomium, on same level as median antenna; 2 pairs of eyes on posterior half of prostomium. First or tentacular segment not distinct dorsally; tentaculophores lateral to prostomium, each with aciculum, few setae on inner side, and pair of dorsal and ventral tentacular cirri, similar to antennae. Elytra and large elytriphores 12 pairs, on segments 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23. Elytra large, suboval, leaving middorsum uncovered, without fringes of papillae, thick, soft, with micropapillae on (*H. robustus*) or with microtubercles and conical macropapillae (*H. helotypus*). Dorsal cirri on non-elytrigerous segments, with cylindrical cirrophores and smooth styles; dorsal tubercles bulbous inflated areas. Second or buccal segment with first pair of elytriphores, biramous para-

podia, and long ventral buccal cirri lateral to ventral mouth. Eversible muscular pharynx with 2 pairs of chitinous hooked jaws and border papillae; [about 15 pairs (13–17, in *H. helotypus*) or border papillae plus numerous branched, threadlike papillae, in *H. robustus*]. Parapodia biramous, with small conical notopodia on anterodorsal sides of large neuropodia; neuropodia with subequal presetal and postsetal lobes, with smaller, truncate supraacicular parts and longer, diagonally truncate subacicular parts. Noto-setae slender, with spinous rows, short, with blunt tips and longer, with fine tips. Neurosetae stout, with long spinous regions and long, bare, entire tips. Ventral cirri short, subulate. Nephridial papillae beginning on segment 8. Pygidium with anal ridge and pair of anal cirri.

Hermilepidonotus robustus

(Moore, 1905)

Fig. 1

Lepidonotus robustus Moore, 1905:544, pl. 36:figs. 32–35.—Hartman, 1948:12.

Lepidonotus helotypus.—Seidler, 1924:56 (part).—Annenkova, 1937:145, pl. 1:fig. 1, pl. 3:fig. 14.—Hartman, 1938:109.—Uschakov, 1950:157; 1955:128, fig. 19, A–E; 1965:107, fig. 19, A–E.—Chlebovitsch, 1961:165. Not Grube, 1877.

Hermilepidonotus robustus.—Uschakov, 1974:458, figs. A–H (synonymy); 1982:112, pl. 33, 1–8.—Buzhinskaja, 1985:82.

Material examined.—Alaska: Shelikov Strait, 88–119 m, from hermit crab, *Albatross* sta 4291, 15 Aug 1903, holotype of *L. robustus* (USNM 5523). Virgin Bay, T. Kincaid, collector, 1 specimen (USNM 32311). Coal Harbor, Unga Island, 1872, W. H. Dall, collector, 1 specimen (USNM 18652). Kodiak Island, W. J. Fisher, collector, 1 specimen (USNM 18867). Aleutian Islands, R. C. McGregor, collector, 1 specimen (USNM 18904). Canoe & Cold Bays, 27–73 m, Sep & Oct 1940, 4 specimens (USNM 21318–21320; ZIASL, ident. by Hartman, 1948).

Bering Sea: West Black Hill, 18 m, 27 Jul 1957, Weber, collector, 1 specimen (USNM 32310).

Okhotsk Sea: 16 Aug 1947, P. V. Uschakov, collector, 1 specimen (USNM 43574, from ZIASL, as *L. helotypus* by Uschakov, 1950).

Description.—Length of holotype 37 mm, width with setae 17 mm, 26 segments. Lengths of specimens examined 13–40 mm, widths 7–16 mm. Uschakov (1974) reported lengths to 65 mm, widths with setae to 20 mm. Body elongate-oval, flattened dorsoventrally. Segments multiringed (wrinkled), with pigmented transverse bands. Large oval elytra leaving middorsum uncovered, without fringes of papillae. Elytra rather thick, soft, of gelatinoid texture, with pigmented network on median and posterior areas, colorless on anterior and lateral areas; surfaces with slightly raised, bulbous, white spots with small “papillae” (thickened cuticle?) in center and scattered micropapillae (Fig. 1J; Moore 1905, pl. 36:fig. 32; Uschakov 1974, figs. C, D; 1982, pl. 33,3). Dorsal cirri on non-elytrigerous parapodia with cylindrical cirrophores, bulbous basally, on posterodorsal sides of notopodia, with styles long, cylindrical, with filamentous tips, and extending beyond neurosetae; dorsal tubercles forming slightly inflated areas (Fig. 1G; Moore 1905, pl. 36:fig. 35; Uschakov 1974, fig. B; 1982, pl. 33, 2).

Bilobed prostomium with stout ceratophore of median antenna in anterior notch, style rather short, with filamentous tip; lateral antennae with ceratophores formed of anterior extensions of prostomium, equal in length and lateral to ceratophore of median antenna, with styles slightly shorter; palps stout, tapering, slightly longer than antennae; anterior pair of eyes in region of greatest width of prostomium, larger than posterolateral pair; tentaculophores with few (0–7) slender setae on inner sides; dorsal and ventral tentacular cirri similar to median antenna (Fig. 1A; Uschakov 1974, fig. A; 1982, pl. 33, 1).

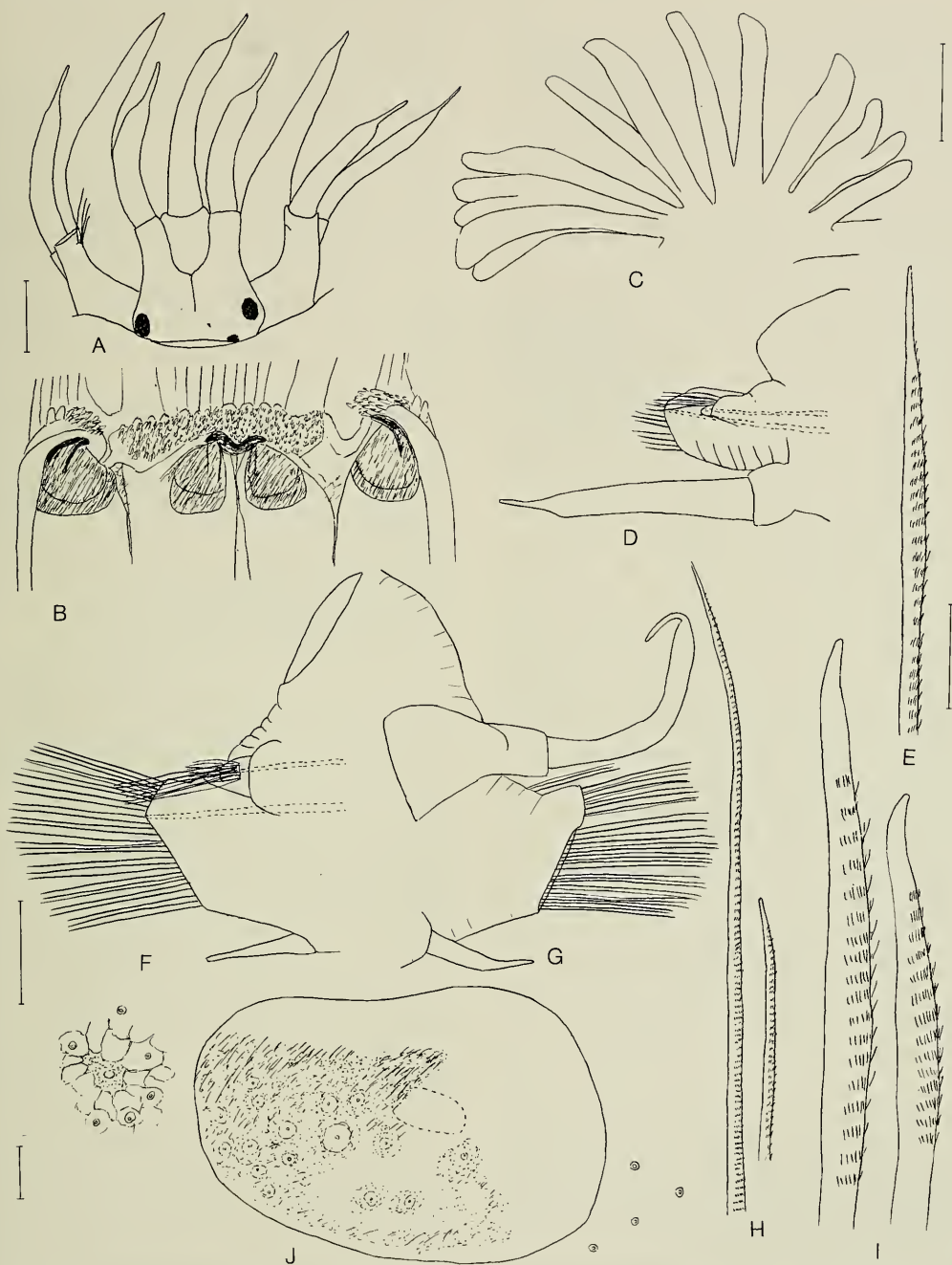


Fig. 1. *Hermilepidonotus robustus*, A, D–J, holotype of *Lepidonotus robustus* (USNM 5523); B, C, pharynx from specimen from Aleutian Is. (USNM 18904): A, Dorsal view of anterior end, posterior pair of eyes partially hidden by segment II; style of left dorsal tentacular cirrus missing; setae lacking on right tentaculophore; B, Muscular pharynx removed from body and cut open midventrally and flattened, showing left and right ventral jaws on outside and dorsal pair of jaws in middle, and distal pharyngeal papillae; C, Pharyngeal branched papillae; D, Right elytrigerous parapodium from segment II, anterior view, acicula dotted; E, neuroseta from same; F, Right middle elytrigerous parapodium, anterior view, acicula dotted; G, Right middle cirrigerous parapodium, posterior view; H, Short and long notosetae from same; I, Short lower and longer upper neurosetae from same; J, Right middle elytron, with detail of micropapillae and pigmented network. Scales = 1.0 mm for A, B; 0.2 mm for C; 1.0 mm for D, F, G; 0.1 mm for E, H, I; 1.0 mm for J.

Segment II without nuchal fold, with large bulbous elytophores, biramous parapodia, and long ventral buccal cirri, lateral to ventral mouth, similar to tentacular cirri (Fig. 1D; Uschakov 1974, fig. A; 1982, pl. 33, 1). Notosetae similar to following segments; neurosetae more slender than following, with long spinous regions and long tapered bare tips (Fig. 1E). Eversible muscular pharynx with 2 pairs of large hooked jaws and numerous border papillae enclosing numerous branched, threadlike papillae, forming thick brush (Fig. 1B, C; Uschakov 1974, figs. F, G, H; 1982, pl. 33, 6–8).

Biramous parapodia with small subconical notopodia on anterodorsal bases of larger neuropodia; smaller supraacicular part of neuropodia truncate and larger subacicular part diagonally truncate (Fig. 1F, G; Moore 1905, pl. 36:fig. 35; Uschakov 1975, fig. B; 1982, pl. 33, 2). Notosetae forming close tuft, slender, with close transverse rows of fine teeth, some shorter, with blunt tips, and some longer, tapering to slender tips and extending beyond tips of neuropodia (Fig. 1F, H; Moore, 1905 pl. 36:figs. 34, 35). Neurosetae stout, dark golden color, forming dense bundles arranged in horizontal rows; 2 supraacicular and 7 subacicular (Moore 1905), with long spinous regions (13–20 rows), supraacicular longer than subacicular ones, all with long, slightly hooked, bare tips (Fig. 1F, I; Moore 1905, pl. 36:fig. 33; Uschakov 1974, figs. B, E, 1982, pl. 33, 2, 5). Ventral cirri short, subulate, extending to lower tips of neuropodia (Fig. 1F, G). Nephridial papillae beginning on segment 8, on inflated areas and directed between parapodia. Pygidium with anus on middle of segments 25–26, with pair of anal cirri.

Distribution.—Gulf of Alaska, Bering Sea, Aleutian and Kurile Islands, North Japan and Okhotsk Seas, in 0–210 meters.

Hermilepidonotus helotypus
(Grube, 1877), new combination

Fig. 2

Polynoe (Lepidonotus) helotypus Grube, 1877:49.

Polynoe (Lepidonotus) gymnonotus Mar-enzeller, 1879:112, pl. 1:fig. 3.

Lepidonotus gymnonotus.—McIntosh, 1885:64, pl. 10:fig. 4, pl. 17:fig. 5, pl. 9A:figs. 2, 3.

Lepidonotus holotypus.—Seidler, 1924:56, figs. 12, 13 (synonymy, part, not *L. robustus* Moore).—Fauvel, 1933:8.—Monro, 1934:358.—Not Annenkova, 1937:145 (= *H. robustus*)—Hartman, 1938:109 (part, not *H. robustus*).—Not Uschakov, 1955:128 (= *H. robustus*).—Uschakov & Wu, 1959:10, 28–29; 1965:157; 1979:17 (English translation).—Imajima & Hartman, 1964:25 (synonymy).—Imajima & Gamô, 1970:2, fig. 4.—Rho & Song, 1974:77, figs. 12–16; 1975:98.—Uchida, 1982:3, figs. 4–7.—Jae, Lee, & Noh, 1987:2, pl. 1A–D.

Lepidonotus (Lepidonotus) helotypus.—Uschakov, 1982:106, pl. 30, 1–7).

Material examined.—China: Chefóo, Grube, collector, syntype of *P. (L.) helotypus* (ZMB 1074). China, C. Ping, collector, 2 specimens (BMNH 1925.5.5.11; USNM 50910, ident. Monro, 1934).

Japan: off Kobé, 15–91 m, *Challenger* Expedition, 2 Jul 1873, 3 specimens (BMNH 1885.12.1.46; 1921, 5,1,169, as *L. gymnonotus* by McIntosh). Kobé, Gordon & Smith, collectors, 3 specimens (ZMB Q1858). Kokodate Bay, 2–25 m, *Albatross* sta 3656, 3657, 19 Sep 1895, 11 specimens (USNM 23749, 50911, 50912). Hokodate, Hilgendorf, collector, 2 specimens (ZMB 2091, as *P. (L.) gymnonotus*). South Japan, N. Schedel, collector, 5 specimens (ZMH V-526, as *L. gymnonotus* by Augener). Formosa or Japan, Laberer, collector, 5 specimens (ZMB 211, as *L. gymnonotus*). Hayama, Miura Peninsula, May 1966, Imajima, collector & identified, 1 specimen (USNM 544770, from NSMT).

Description.—Length of syntype (ZMB 1074) 50 mm, width with setae 16 mm, segments 26. Imajima & Hartman (1964) reported lengths to 63 mm, widths to 20 mm. Body elongate-oval, flattened dorsoventral-

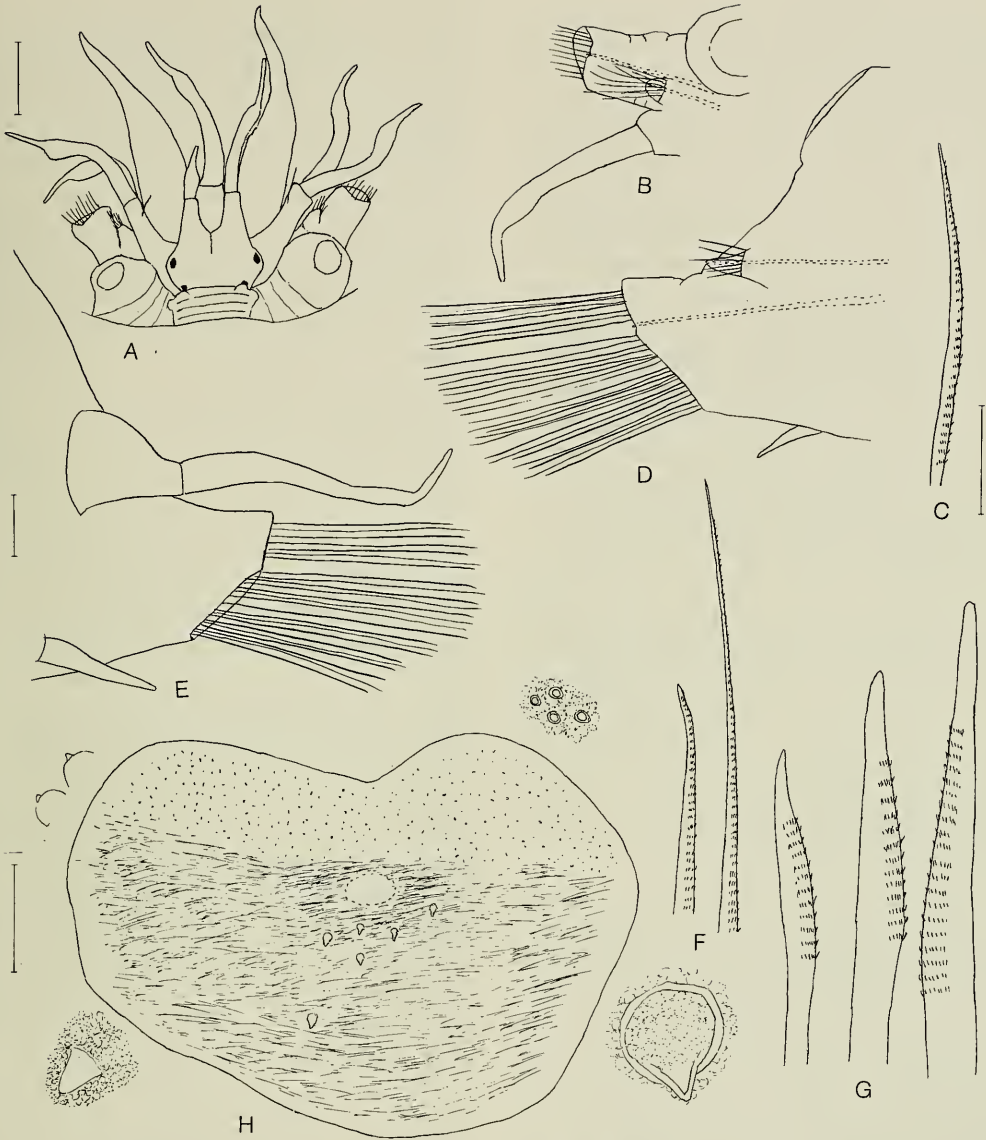


Fig. 2. *Hermilepidonotus helotypus*, specimen from Hokodate, Japan (USNM 50912); A, Dorsal view of anterior end, left lateral antenna small, regenerating; B, Right elytrigerous parapodium from segment II, anterodorsal view, acicula dotted; C, Neuroseta from same; D, Right middle elytrigerous parapodium, anterior view, acicula dotted; E, Right middle cirriferous parapodium, posterior view; F, short and long notosetae from same; G, Lower, middle and upper neurosetae from same; H, Right middle elytron, with detail of conical macropillae and microtubercles among cellular network. Scales = 1.0 mm for A; 0.5 mm for B, D, E; 0.1 mm for C, F, G; 1.0 mm for H.

ly. Segments multiringed, with transverse colored bands on posterior parts of segments, matching elytra in color. Large oval elytra overlapping and leaving middorsum uncovered, without fringes of papillae (Mc-

Intosh 1885, pl. 10:fig. 4). Elytra rather thick, soft, with pigmented network, except for anterior fourth and over scar of attachment to elythrofore; numerous microtubercles in cellular network of colorless area;

surface of posterior pigmented area with projecting whitish conical macropapillae, variable in number and arrangement, from almost lacking to numerous (10–50, by Uschakov 1982) (Fig. 2H; McIntosh 1885, pl. 17:fig. 5; Uchida 1982, fig. 5A, C–J; Uschakov 1982, pl. 30, 2). Dorsal cirri on non-elytrigerous segments with cylindrical cirrophores, bulbous basally, on posterodorsal sides of notopodia, with styles long, cylindrical, with tapered tips and extending to tips of neurosetae; dorsal tubercles bulbous, inflated (Fig. 2E; Uchida 1982, fig. 6C).

Bilobed prostomium with stout ceratophore of median antenna in anterior notch, style with subterminal enlargement and filamentous tip; lateral antennae with ceratophores formed of anterior extensions of prostomium, slightly shorter than ceratophore of median antenna; palps stout, tapering, longer than antennae; anterior pair of eyes in region of greatest width of prostomium, slightly larger than posterolateral pair; tentaculophores with aciculum and slender seta on inner side, and dorsal and ventral tentacular cirri, similar to median antenna (Fig. 2A; Uchida 1982, figs. 5A, B, 6A; Uschakov 1982, pl. 30, 1).

Segment II with slightly developed nuchal fold, with large bulbous elytriphores, biramous parapodia, and long ventral buccal cirri, similar to tentacular cirri (Fig. 2A, B; Uchida 1982, fig. 5B). Notosetae similar to following segments; neurosetae more slender than following, with long spinous regions and slender entire tips (Fig. 2C). Eversible pharynx with 13–17 pairs of marginal papillae (Uschakov 1982, pl. 30, 7).

Biramous parapodia with small conical notopodia on anterodorsal sides of large neuropodia; neuropodia with subequal pre-setal and postsetal lobes; smaller supraacicular part of neuropodia truncate and larger subacicular part diagonally truncate (Fig. 2D, E; Uchida 1982, fig. 6B, C). Notosetae forming small bundle, thin, with long spinous regions, some short, with blunt tips and some long, tapering to fine tips (Fig. 2F; Uchida 1982, fig. 7E, F). Neurosetae

numerous, stout, dark reddish amber-colored, with long spinous regions, supraacicular ones with longer spinous regions than subacicular ones, all with rather long, slightly hooked, entire tips (Figure 2G; Uchida 1982, fig. 7I–K). Ventral cirri short, subulate, not extending to lower tips of neuropodia (Fig. 2D, E; Uschakov 1982, pl. 30, 4). Nephridial papillae beginning on segment 8. Pygidium with anus medial to parapodia of segment 25, with pair of anal cirri medial to dorsal cirri of last 2 segments, directed posteriorly.

Distribution.—Yellow Sea, China, South Japan, Korea, Kurile Islands, in 0–108 meters.

Remarks.—Uschakov referred *Lepidonotus robustus* to the new genus *Hermilepidonotus*, based mainly on the unusual structure of the pharynx, with numerous thread-like papillae forming a thick brush. Specimens of *Lepidonotus*, and the majority of other polynoids, have the pharynx with 9 pairs of large marginal papillae. *Lepidonotus helotypus*, referred herein to *Hermilepidonotus*, has more numerous border papillae (13–17 pairs) than the 9 pairs in other species of *Lepidonotus*. Also, the neuropodia of the two species of *Hermilepidonotus* differ from those of other *Lepidonotus* species in having subequal pre-setal and postsetal lobes (Figs. 1F, G, 2D, E) and lacking the larger pre-setal conical acicular process as found in species of *Lepidonotus*.

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